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THE NATURE CONSERVANCY NEWS

May/June 1983

NATIONAL WETLANDS PROGRAM

Helping Hand for Mother Nature

One of the many casualties of hard fiscal times has been the preservation of the wetlands, the vast incubators of marine life and roosting sites of migratory birds in most of the nation's 50 states.

The federal and state governments simply haven't had the money to save marshes and lagoons through public acquisition, and they are being lost to landfill and pollution at the rate of 500,000 acres a year.

But a major step toward conservation of this vital and irreplaceable natural resource was taken last week with the announcement that The Nature Conservancy and the Richard King Mellon Foundation will each contribute $25 million toward the purchase and management of wetlands from the Atlantic Coast to Hawaii over the next five years.

The Conservancy, a nonprofit organization, and the foundation, one of the country's wealthiest private philanthropies, expect that their contributions will encourage state governments to raise supplementary funds.

The first effort will be to acquire 17,000 acres on the lower 18 miles of the Escambia River in the Florida Panhandle, and Gov. Robert Graham said his state hopes to contribute $320 million toward the Escambia and other purchases over the next decade.

Officials of the Conservancy said a number of locations in California are also under consideration.

The Mellon Foundation contribution is the largest ever made by a private philanthropy for environmental purposes. The Conservancy will match it with donations from individuals, corporations, government agencies and other philanthropies.

It is regrettable that the federal government, long the prime source of money for wetlands preservation, has withdrawn much of its support, and that most states also have struck acquisitions from their budgets.

But the efforts of The Nature Conservancy and the Mellon Foundation not only will save many sites from development or despoliation but may also stimulate greater government involvement.

—LOS ANGELES TIMES
January 17, 1983

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THE NATURE CONSERVANCY NEWS

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COVER: Outlook toward Conservancy-protected acreage at Weeks Bay on Alabama's Gulf Shore—estuarine habitat for migratory birds. Photo by Susan Bournique.

The Nature Conservancy is a national conservation organization committed to the preservation of natural diversity by protecting lands containing the best examples of all components of our natural world.

To date the Conservancy and its members have been responsible for the preservation of 2,005,626 acres of forests, marshes, prairies, mountains, and islands: home to rare and endangered species of wildlife and plants. 3,115 projects have been completed since the acquisition of the first preserve in 1954. Approximately 60% of all preserves are retained by the Conservancy and managed by staff and volunteer land stewards.

A membership, non-profit organization, the Conservancy was incorporated in 1951 in the District of Columbia for scientific and educational purposes.

A copy of the last financial report filed with the Department of State may be obtained by writing to: New York State, Department of State, Office of Charities Registration, Albany, New York 12231, *or* The Nature Conservancy, 1800 North Kent Street, Arlington, Virginia 22209.

President's Letter

Early this year, The Nature Conservancy and the Richard King Mellon Foundation launched the National Wetlands Conservation Project—a five-year, $50-million effort to conserve endangered water-related ecosystems in the United States. The foundation is providing major funding for this initiative with a record $25-million grant, the largest ever made by a private foundation for conservation purposes.

The project will protect outstanding examples of our increasingly threatened aquatic and wetland ecosystems, from the Atlantic coast to vital watersheds in Hawaii. In doing so, we will ensure not only their continued productivity as natural water-management systems, but also their value as habitat for diverse communities of plants and animals.

A second major objective of the project will be one of cooperative effort. For many years, the federal government has been the primary source of funds for wetlands conservation. Today the federal role is much reduced, and the task of preserving aquatic systems is too urgent and too large for either the public or private sector to undertake alone. Clearly, the job will be accomplished only if all parties—government at all levels as well as private citizens and institutions—increase their efforts. Wherever possible in this new program, and in a variety of ways, we will seek to involve others as partners and to bring to bear the resources of both the public and private sectors.

A third purpose of the National Wetlands

photo by Frans Lanting

Conservation Project is to increase public awareness of the present-day threats to our vital water-related systems. The ultimate goal is enhanced public support for the protection of these systems.

Our first step, now in progress, is to identify the critical wetland areas to be protected through the project. Once this has been done, a plan for acquiring and managing each area will be developed and work begun, in concert with other private organizations and government agencies willing to help.

By encouraging gifts of land, matching gifts, and bargain sales; by reselling noncritical acreage with conservation restrictions; by selling land to government conservation agencies; and by direct fundraising, the Conservancy expects to use and re-use the Mellon Foundation grant over the next five to ten years to preserve wetlands worth at least $50 million. Although safeguarding these especially important areas will be a very significant contribution, it will fall far short of meeting the national need. But the effects of the project can reach far beyond the $50 million measure if, as we expect, these demonstration projects can encourage and mobilize parallel action by other public and private agencies, and state governments in particular.

Successfully completing this ambitious undertaking will not be easy. The individual projects will be complex, difficult, and costly. They will require innovative strategies to augment the protection techniques the Conservancy has already developed over the years.

Moreover, in making their grant, the trustees of the Richard King Mellon Foundation have issued a major challenge: the Conservancy must raise enough money from other sources for the wetlands project to restore the original $25 million grant, which was made to the Land Preservation Fund—our revolving loan fund. This will enable the Conservancy to continue using the Mellon funding for additional conservation efforts over many years to come.

This grant is the largest in Richard King Mellon Foundation history. In 1980, a $15-million grant from the foundation provided initial funding for our Rivers of the Deep South Program, the on-going, joint private and public effort that has so far preserved over 100,000 acres of bottomland hardwood forests and wetlands along six rivers in the Southeast. The success of the "Rivers" venture has encouraged us to raise our sights.

At a time when, by best available estimates, only about one percent of private philanthropic donations is being devoted to environmental needs, the Mellon Foundation example and its clear perception of our national priorities are an extraordinary contribution to the public welfare. The Nature Conservancy is deeply grateful to the Richard King Mellon Foundation for making it possible to envision, and to bring into being, the National Wetlands Conservation Project. All Americans are indebted to the Mellon trustees for their leadership in protecting our most irreplaceable national resources.

Bill Blair

William D. Blair, Jr.

The Nation's Aquatic Estate

by Robert E. Jenkins
Vice President for Science

A WATER CRISIS looms in America. In some parts of the country, it has already arrived. *The Nation's Water Resources,* a second national assessment published in 1979 by the U.S. Water Resources Council, indicates that: 1) actual depletion of water is occurring rapidly in the Southwest and the high plains; 2) surface-water pollution caused by agricultural and urban run-off plagues the southern Rockies and southern Mississippi regions and the Northeast; 3) Northeastern surface water is additionally impacted by point-sources of pollution, such as industrial and urban outfalls; 4) coastal waters are seriously degraded in all developed areas; and 5) groundwater pollution and eutrophication affect large scattered parts of the country. Each of these problems is serious and growing.

Although the national water assessment gives little attention to ecological effects of these problems, it is obvious that the earliest casualties of what seems likely to be a civil water war will be the biota dependent upon many of our major aquatic ecosystems. Of course, with them will go the recreational, aesthetic, and ecological benefits that society derives from our natural waters.

Ironically, many of the measures we take to cope with our water quality and quantity problems exacerbate the impact these difficulties already have on our natural ecosystems. Dams, channel modifications, flood control levees, dredge-spoil disposal, wetland drainage, and filling have become pervasive across America. The nation is already largely "replumbed"—all new hydrological regimes exist in many parts of the country. Unfortunately, the composition and function of our natural aquatic systems are keyed to earlier hydrological cycles. Now these systems are faced with a "double-jeopardy" situation from which many will not emerge intact.

Fortunately, there is a widening perception of this environmental threat. Sources as varied as the National Academy of Sciences and the U.S. Fish and Wildlife Service have been analyzing various aspects of our water-resource problem and recommending specific actions. Collectively, they point out that our nation's aquatic estate is in poor condition and growing worse.

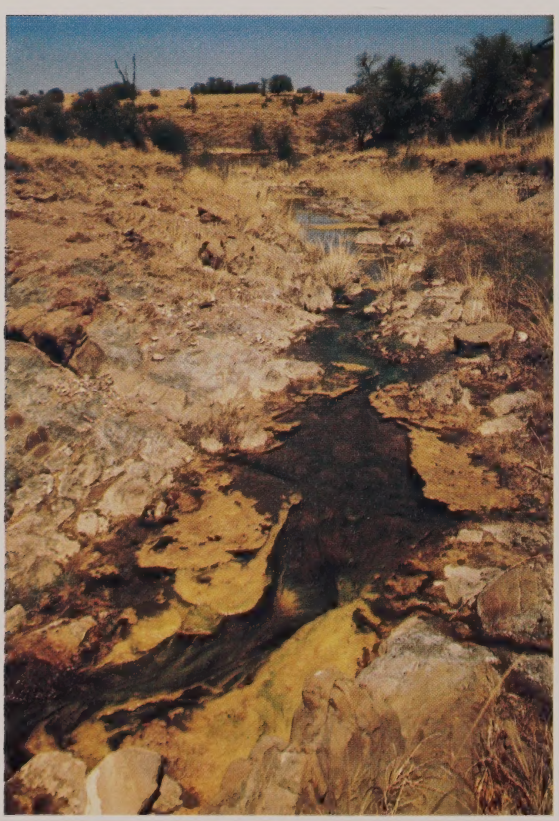
FOR MORE THAN three decades, The Nature Conservancy has been striving to preserve America's heritage of biological and ecological diversity by identifying and selecting, protecting and managing outstanding remnants of the full array of our country's ecosystems and habitats. Preserving aquatic systems has been a significant part of this 30-year endeavor. In fact, of the 3,098 conservation projects carried out by the Conservancy in that time, 48 percent were completed to safeguard natural systems that are at least partly water-related.

Other organizations and agencies have been active in aquatic conservation as well. Some have concentrated entirely on protecting rivers, coastal systems, or freshwater marshes, some on encouraging governmental actions. A few have directly established aquatic reserves. For example, the U.S. Fish and Wildlife Service has created most of its national wildlife refuges to protect waterfowl marshes. It was not an accident that the great conservation fund created in 1964 through the use of offshore oil revenues was named the Land *and Water* Conservation Fund. Many water-related Conservancy projects have been carried out in cooperation with federal and state agencies using appropriations from this fund.

Despite these collective efforts, the state of the nation's waters has continued to deteriorate. Pollution, drainage, waterway alteration, consumptive

use, and watershed abuse impinge on protected and unprotected watersheds alike. Very few conservation projects have been vast enough to provide for the complete protection of larger drainages. None of our major rivers, for example, has been preserved in anything near its natural condition. Even in small watersheds, conservation lands usually make up only a partial mosaic, so that the aquatic systems are still affected by uncontrollable encroachments. Thus, our aquatic environment is not only highly endangered, but it is also exceptionally difficult to preserve.

AQUATIC CONSERVATION NEEDS are quite varied, mainly depending on the size of the system to be preserved. In smaller systems—like springs, tributary streams, and small lakes—it is sometimes possible and always preferable to save the whole integral unit. In the arid Southwest for example, a highly endangered aquatic system is the *cienega*—a desert spring marsh. To protect Arizona's Canelo Hills *cienega,* the Conservancy simply acquired the whole spring and 200 acres of immediately surrounding property. Although still vulnerable to groundwater depletion, this *cienega* is otherwise a viable and defensible aquatic preserve. Eastern vernal pools and some other systems also lend themselves to this direct approach.



Tim Loomis

The Conservancy's Canelo Hills Cienega southeast of Tucson—a highly endangered spring marsh, preserved in its entirety.

For somewhat larger systems—like Finzel Swamp in Maryland—the same procedure may work, but it involves acquiring much more acreage, raising more money, and often negotiating with many landowners. A highland bog/swamp in excellent condition, Finzel harbors many regionally significant species including some that occur far south of their typical ranges. Finzel also contains the headwaters of the Savage River, one of Maryland's scarce high-quality cold-water streams. Thus it exerts an important effect on a much larger system. Although fewer than 400 acres drain into the bog, the acreage was divided into about a dozen different parcels. Consequently, this project, begun in 1970, has involved a gradual assemblage of properties. Only two inholdings of land remain; but because the Conservancy has established common management objectives with their owners, the Finzel Swamp system is basically secure.

Successfully preserving even medium-sized watersheds often requires the joint action of more than one agency. Elder Creek is a pristine tributary of the Eel River in northern California. Cloaked with uncut native forest, the creek's now-protected drainage was selected by the U.S. Geological Survey as one of a small number of "national hydrological benchmarks"—systems that are monitored so as to compare them with altered aquatic systems. It was also designated by the National Park Service as the country's first national natural landmark.

To protect Elder Creek, the Conservancy purchased over 4,000 acres from a private owner in 1958. The land encompasses the lower watershed. But the upper watershed was controlled by the Bureau of Land Management (BLM). Recognizing the significance of the resource, BLM agreed to withdraw an additional 4,000 acres from incompatible uses, thereby completing protection of the entire watershed and establishing a viable aquatic preserve under common management.

Using protection methods other than outright acquisition is another approach to larger watershed conservation. For years the Conservancy has been employing devices like cooperative management agreements, short- and long-term leases, undivided interests, and easements—and their use is increasing. These tools can significantly reduce costs and also accommodate those landowners unwilling to sell or donate property.

If landowners retain total control of key properties within a watershed, the aquatic system can still be destroyed despite complete protection of the rest of the lands involved. It is crucial that property owners and those seeking to safeguard the system reach common agreements on how the land should

Judith Bernstein

A shady elbow of northern California's Elder Creek, where the Conservancy and the Bureau of Land Management joined forces in the fifties to secure watershed protection.

be managed. Conservation easements are often the best solution to large watershed protection, and they have been admirably used along the Brule River in northern Wisconsin.

Counted among the nation's outstanding trout streams because of its pristine biological communities and unaltered hydrological system, the Brule is regarded by some limnologists as one of the Conservancy's most significant conservation projects. The integrity of the upper part of the river is protected by well-managed state and national forests. The lower reaches, however, flow through 5,000 acres of relatively large, long-established private riparian estates. In this case, each landowner was asked to convey a conservation easement to the Conservancy, in keeping with an overall management plan. The owner of the largest tract was the first to convey an easement; gifts of all the other requested easements followed, thereby safeguarding all of the Brule's lower watershed. The landowners have relinquished their development rights; but at the same time they retain ownership of their lands and, while living there, are able to assist the Conservancy in maintaining the protected properties.

SOMETIMES AQUATIC conservation projects can be accomplished effectively simply by protecting a key portion of the total resource. An example is the Conservancy's Crystal River project in Florida. Although they embrace only 31 acres in a large, multiply used system, the 14 islands in the King's Bay section of the Crystal River are scattered across a critical series of warm-water springs. The largest North American population of endangered West Indian manatees is dependent on these springs during cold months. By purchasing the islands, the Conservancy blocked construction of a real estate subdivision, which would have severely damaged the manatees' wintering habitat and greatly depleted the remaining U.S. population of this greatly imperiled species.

Very large aquatic systems often seem beyond the reach of conservation, at least through the efforts of a single organization. Yet over the last several years, the Conservancy has improved its ability to at least limit ecological damage to large systems by undertaking bigger projects.

A major milestone in preserving unusually large aquatic systems is the Conservancy's Virginia Coast Reserve. The project was begun in 1969

with the ambitious acquisition of three barrier islands. Then, with dogged persistence and some inspired philanthropic support, the Conservancy was able to establish a 35,000-acre preserve embracing most of a 50-mile stretch of barrier islands and associated marshes. The reserve now constitutes the best protected and least disturbed chain of barrier islands in the nation. It contains the finest remaining examples of various coastal ecosystems—as well as a critical expanse of the Atlantic flyway for migrating shorebirds, waterfowl, and raptors—and it provides vital habitat for innumerable species of plants and animals. The islands also buffer extensive high-quality marine and estuarine systems, whose rich resources of fish and shellfish would have been seriously degraded had the barrier islands of the Virginia Coast Reserve not been protected.

Such large projects often attract additional conservation assistance, once people see that the system targeted for preservation can be saved. Designation of the Virginia Coast Reserve as a national natural landmark, a Society of American Foresters natural area, and as an international biosphere reserve has reinforced Conservancy protection of the islands. The adjacent waters have been proposed for estuarine and marine sanctuary status. Both the state and federal governments and a growing number of local mainland residents are associating themselves with preservation and use of the reserve.

Equally germane to the Conservancy's heightened perception of aquatic conservation possibilities has been the Rivers of the Deep South Program. Initiated two years ago with the support of the Richard King Mellon Foundation, this program has concentrated on preserving the lower reaches of six of the country's best remaining Gulf Coast rivers: the Pascagoula, Apalachicola, Pearl, Suwanee, Choctawhatchee, and the Mobile-Tensaw delta and bay. It has attempted to protect the important riparian remnants, bottomland swamp forests, and (insofar as possible) the other natural values of the rivers and their estuaries. These projects involve what may be the closest coordination in Conservancy history among state, private, and corporate forces, in cooperation with local jurisdictions, landowners, and local citizens. So much has already been accomplished around each of these river reaches—more than 100,000 riparian acres

M. J. Jaeger

By acquiring conservation easements on 4,900 acres, the Conservancy has protected the wild upper reaches of northern Wisconsin's Brule River in recent years.

Tim Crawford

Just southeast of Sun Valley, Idaho, this wildlife-rich spring-fed watercourse is safe within the Conservancy's Silver Creek Preserve.

are presently being protected—that the Conservancy has been encouraged to approach the preservation of other endangered U.S. aquatic habitats in the same way.

JUST WHEN aquatic conservation needs are increasing, recent cutbacks in federal funding are reducing the nation's ability to protect its waters. The overall public and private resources now available for conservation purposes are nowhere near as great as those formerly expended by various federal agencies alone. Remaining funds will have to be used far more efficiently. This will require a clearer assessment of priorities, a correspondingly tighter focus on those priorities, and the coordinated use of an array of conflict-avoiding protection devices and strategies. It is only through close cooperation between the public and private sectors that even representative portions of our nation's former aquatic riches can be effectively preserved for the future. This is the nature of the task with which the Richard King Mellon Foundation has challenged The Nature Conservancy and conservationists throughout America.

A new effort already under way on the lower Escambia River in Florida illustrates one kind of cooperative approach the Conservancy expects to repeat through its National Wetlands Conservation

Betsy Jewett

John Barber

Opposite: Sky-high over the Conservancy's Virginia Coast Reserve—35,000 acres of marshes and barrier island beaches; above: the stately great egret, one of the reserve's legion wading birds.

Project. Successfully protecting 17,000 acres along the lower river depends initially on the coordinated actions of the Northwest Florida Water Management District, the state, the Richard King Mellon Foundation, and the Conservancy. It is hoped that, as in earlier projects, this endeavor will stimulate others, thereby bringing about a measure of protection to the entire integrated aquatic resource.

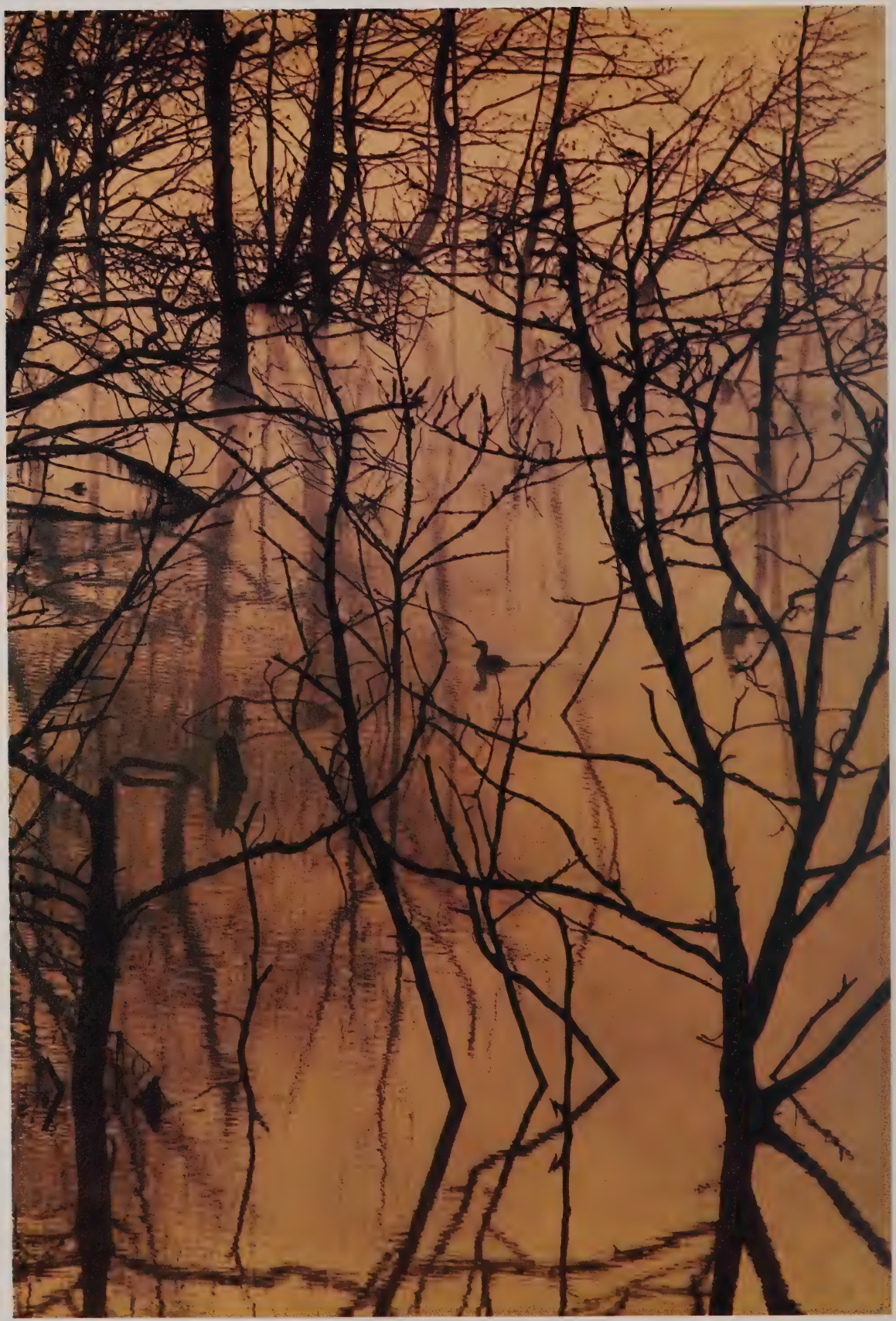
Other jeopardized aquatic systems are currently being evaluated as potential conservation projects. Working with experts in the field of aquatic resource preservation, the Conservancy is compiling data to develop the most objective list possible of significant prospects. Certain criteria are involved in creating such a list.

The most important gauge is the relative endangerment of an aquatic system. Although judgments are complicated by hydrologic and biogeographic ambiguities in classifying ecosystems, it is possible to recognize some complete aquatic ecosystems that are both rare and undergoing rapid alteration. These include nearly all natural aquatic systems of the arid Southwest and the high plains, hydrologically unaltered streams and riparian systems of the Midwest and intermountain region, watersheds supporting concentrations of endangered or endemic species, and certain critical coastal and estuarine resources in high impact areas. Many additional ecosystem types are currently under investigation for inclusion on the list.

The second criterion is the significance of remnant examples. Basically, this boils down to answering questions about the quality, condition, viability, and defensibility of an aquatic system. Is the water pure? Is the hydrological cycle intact? Are the channel and habitat, riparian vegetation and terrestrial watershed natural and unaltered? Is the system large enough, and what are the upstream and downstream influences on it? And finally, will the ecosystem be resistant to future changes?

The last measure is the feasibility of a project. The Conservancy will endeavor to allocate its limited resources to protecting those areas and systems on which it can have a definite impact. Legal and financial considerations that enter into this calculation include riparian and water laws, property prices, and cost sharing from other funding sources. In addition, the Conservancy must determine if it can act in time to halt impending threats to a system and whether or not other agencies or groups can assist in protecting the aquatic system.

Using these criteria, individual projects will be selected as research reveals their merit. The National Wetlands Conservation Project, with its key initial support from the Richard King Mellon Foundation, will enable the Conservancy to secure the protection of a number of major aquatic systems that would otherwise lie frustratingly just beyond its preservation capabilities.



Robert W. Parvin

Wetlands for Wildlife: A Portfolio

Among the many incalculable benefits of undisturbed aquatic systems is the habitat they provide for an abundance of living things: shellfish and fin-fish, insects, reptiles, amphibians, mammals, birds in profusion. These photographs, with their attention to the beauty of our wetlands, also remind us that the waters are *alive*.

John Hall

Alligator surfacing at Georgia's Okefenokee Swamp. In 1978, the Conservancy conveyed 15,000 acres here (a gift of land from the Union Camp Corporation) to the U.S. Fish and Wildlife Service for inclusion in its world-famous refuge.

Opposite: Pied-billed grebe in silhouette.

McFaddin Ranch—an expanse of coastal prairie and brackish marshlands on the Gulf Coast of Texas—bears key feeding and wintering grounds for migrating waterfowl. The Conservancy purchased 42,000 acres here in 1979 for transfer to the U.S. Fish and Wildlife Service.

Robert W. Parvin

Underwater at the Conservancy's 14-island assemblage in Florida's Crystal River: hub of the continent's largest gathering of endangered West Indian manatees.

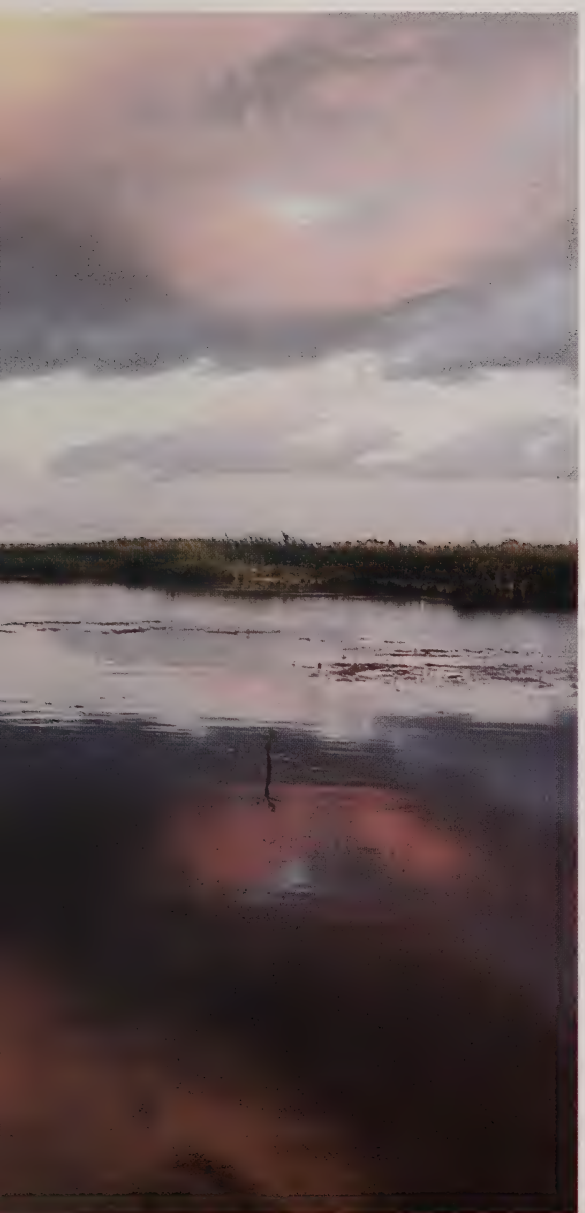
C. C. Lockwood

A Florida Success Story

by Bob Graham
Governor, State of Florida

EARLIER THIS YEAR I was honored to represent the citizens of Florida at a ceremony announcing the National Wetlands Conservation Project and its inaugural purchase: 17,000 acres of riverine wetlands along the lower 18 miles of the Escambia River in northwestern Florida. I am delighted that this state was chosen to become the first beneficiary of this major wetlands protection endeavor undertaken by The Nature Conservancy with initial funding from the Richard King Mellon Foundation.

Selection of the Escambia River project signifies national recognition of another of Florida's ambitious land-acquisition efforts—the Save Our Rivers program. Through this program, the Escambia River wetlands will be repurchased by the Northwest Florida Water Management District, one of five regional water management districts in the state empowered to purchase lands for the Save Our Rivers effort.



C. C. Lockwood

Developed in 1981 by the Florida legislature in response to my request for statewide acquisition of "water-management lands," the Save Our Rivers program is destined to become one of Florida's resource management success stories. It was created by expanding the state's documentary stamp tax fee. The additional dollars—expected to amount to $320 million during the program's ten-year life span—will offer a substantial funding source for Florida's water management districts to acquire critical land and water resource areas. Sites eligible for protection under the Save Our Rivers program include groundwater recharge areas, riparian uplands, floodplain wetlands, and other watershed properties determined to be necessary for water-quality and water-quantity protection.

The water management districts have recently targeted areas to be acquired along many Florida rivers, such as the Apalachicola, Suwannee, St. Johns, Escambia, Loxahatchee, Hillsborough, Myakka, and Kissimmee. Wetlands adjacent to the Everglades National Park and other crucial water-resource properties were also proposed for possible acquisition.

The Save Our Rivers program aptly reflects Florida's commitment to both progressive water-resource management and wetlands protection. By preserving wetlands along our rivers and lakes, we are attempting to use the *natural* management potential of functioning aquatic systems, which play a significant role in storing and conserving water, maintaining or improving water quality, and absorbing flood waters. By using such free "services," we expect to reduce costs common to dams, canals, levees, and reservoirs. At the same time, we anticipate being able to preserve essential elements of Florida's varied wetlands and the rich and diverse plants and wildlife they support.

FLORIDA IS FORTUNATE to have the opportunity to safeguard the Escambia River's extensive riverine swamp and bottomland hardwood wetlands—a once-common habitat that is, unfortunately, vanishing from many areas of the United States. Agriculture, rechannelization, construction of dams and reservoirs, urban-area expansion, and other activities have eliminated major portions of the formerly vast floodplain forests on Southern rivers.

Through the Escambia project not only will we receive a valuable sanctuary for a variety of game and nongame species of wildlife, but we will also

Ken Scudder

ensure preservation of a natural system that functions to protect water resources. In addition, river swamp systems such as those along the Escambia River fuel the aquatic food chain by releasing organic nutrients from their floodplain forests to downstream aquatic systems, especially estuaries. Protection of the Escambia tract will allow Floridians to continue enjoying free and efficient natural water-management services for generations to come. The Escambia's wilderness, recreational, and aesthetic values also are significant: 18 miles of mainstream rivers, many miles of tributary river and creek channels, and numerous oxbow lakes, sloughs, and floodplain lakes are included in the 17,000-acre parcel.

The first purchase through the Save Our Rivers program — Seminole Ranch — was a cooperative acquisition of the Conservancy, the Mellon Foundation, and the St. Johns River Water Management District. The ranch represents public acquisition of the largest and most pristine stretch of freshwater marsh and wetlands left in single ownership in the 2,000 square miles of the upper St. Johns River basin. Because this basin has lost nearly 300,000 acres of floodplain to development over the last 80 years, the hydrological and associated ecological

C. C. Lockwood

Visions of Seminole Ranch, a 28,000-acre marshland acquired under the State of Florida's innovative Save Our Rivers program with Conservancy assistance: a procession of wood storks (top); palms along the St. Johns River (opposite); river otter, semi-immersed (above).

values of this property are magnified. Thus, the ranch will play a key role in the water management district's effort to restore the natural hydrologic functions of the upper St. Johns River basin.

Located in east central Florida, Seminole Ranch embraces nearly 29,000 acres of largely undisturbed freshwater marsh, 19 miles of the mainstream channel of the St. Johns River, all or part of 8 floodplain lakes, and many miles of tributary river and stream channels. These wetlands and associated uplands of cabbage palm, pine flatwoods, wet prairies, old pastures, and mixed hardwood hammocks offer a diverse and productive habitat for fish and wildlife. The area also contains habitat or potential habitat for at least 17 endangered, threatened, or uncommon species. For example, the freshwater marsh is critical feeding and nesting grounds for the wood stork, southern bald eagle, osprey, white and glossy ibis, snowy and great egret, and the Florida sandhill crane.

The combined effort of the state's Save Our Rivers program, the Conservancy, and the Mellon Foundation to acquire Seminole Ranch and the Escambia River property (currently under repurchase negotiation) is an incentive for further cooperative ventures. Because of these successes, preservation of other significant wetland tracts along the Suwannee, Apalachicola, and Choctawhatchee Rivers is currently being considered.

THE SPECIAL relationship between the State of Florida and The Nature Conservancy is not a recent development. In 1954 the Conservancy helped the National Audubon Society to raise funds for purchase of 5,760-acre Corkscrew Swamp—a vital wetland owned and managed by Audubon. Since that project, the Conservancy has continued to help preserve elements of the state's rich and varied natural resources, especially critically endangered areas: Rookery Bay, Gulf Hammock, Blowing Rocks, Lignumvitae Key, St. Vincent's Island, Tiger Creek, Kissimmee Prairie, and Apalachicola River Bluffs and Ravines. With the completion of the Crystal River Manatee Project, The Nature Conservancy will have acquired nearly 132,000 acres in Florida. Much of this acreage is

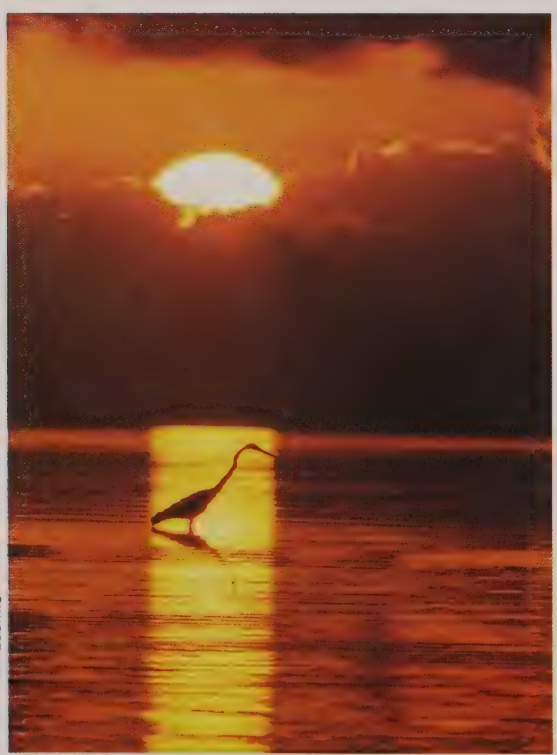
Ken Scudder

included in our state park system or in national wildlife refuges or national monuments.

Over the last two decades, Florida's own land acquisition programs have also been aimed at purchasing key representative examples of the state's ecological systems. From 1963 to 1983, we acquired for recreational and preservation purposes more than 325,000 acres at a cost of nearly $350 million. We are committed to continuing this highly successful effort. An estimated annual average of $85 million is earmarked (over the next several years) for additional purchases under the Save Our Rivers program, as well as through Florida's Conservation and Recreation Lands, Land Acquisition Trust Fund, and Save Our Coasts acquisition programs.

These cumulative figures do not include the state's matching contribution of $40 million to the federal government between 1975 and 1977 to buy lands for the Big Cypress National Freshwater Preserve. This refuge contains 570,000 acres of freshwater marshes and sloughs, cypress swamps and wet prairies. The preserve protects a critical water supply for the adjacent 1.5-million-acre Everglades National Park, which also was created with contributed state funds.

Moreover, Florida's water management districts administer more than one million additional acres of lands needed to protect the state's ground and surface waters. These are primarily remnant everglades wetlands in the three vast south Florida water conservation areas.



Tim Loomis

Sun stripe and great blue heron off Lignumvitae Key, protected in 1971 through the cooperative efforts of the Conservancy and the State of Florida.

ALTHOUGH Florida's system of parks, preserves, water management lands, and other environmentally sensitive areas are extensive in both size and diversity, we cannot afford to rely solely on these past achievements. Even with our premier land and water management laws and a well-tuned environmental regulatory and management system, Florida's tremendous population and tourism growth rates cause development that threatens the overall integrity of many of our remaining high-quality natural resources.

The next 15 to 20 years will be crucial to Florida's environmental and economic future. We must succeed in preserving enough of the natural Florida to provide both our residents and visitors with a desirable quality of life. Natural systems must be of sufficient size and diversity to be self-maintaining and resilient to inadvertant errors in management practices.

Thus, we are involved in a dramatic race in Florida—a contest between the pressures of growth and the urgency to preserve "what is left." I feel that we will win the conservation battle, but not without compromise on the part of both growth and conservation interests. Those who represent growth and development must understand that the citizens of Florida are demanding that future development ventures not be overly exploitive and that they be designed to protect local resources, such as water. On the other hand, conservation interests must realize that we cannot preserve *all* remaining, desirable natural-resource areas. The conservation "bankroll" is simply too limited.

Therefore, we must make a determined effort to spend our restricted funds and resources to protect those parts of our natural communities that are the most desirable and vulnerable. The Florida Natural Areas Inventory will be a critical element in this endeavor. A cooperative effort of the Florida Department of Natural Resources and the Conservancy, the program is working to identify our state's rarest and most threatened natural resources. This information will be invaluable in helping decision-makers who select lands for Florida's varied land acquisition programs.

I heartily welcome the assistance of The Nature Conservancy and the Richard King Mellon Foundation in establishing natural wetland preserves in Florida. I challenge other states to participate in this critical endeavor, especially here in the South where we still have so much left to protect—or to lose.

ECOLOGY FORUM

No. 48
by Orie L. Loucks
Holcomb Research Institute
Butler University

WATER FOR THE LAND

In one region after another across the United States, in little more than a generation, water has come into tremendous demand to support our homes and our commerce. Seldom is it left to play its primary role in nourishing natural environments. There are many reasons for this, but one, certainly, is that it is difficult for citizens to "see" how activities like the pumping of groundwater or upland development affect flows of water to neighboring streams and wetlands. It is even more difficult to trace the effects of subtle alterations in land use on hydrological conditions governing the reproduction of plants and animals.

Water, in suitable quantities and of suitable quality, is viewed as a critical limiting resource to economic development on almost three-fourths of our nation's land mass. It is no surprise that natural aquatic environments and their biota are in jeopardy in virtually every major watershed. The sheer complexity of interactions within these systems has worked against their protection. In order to safeguard a wildlife-rich portion of a stream, for example, we must consider the groundwater into which it reaches—as well as its headwaters, which may be miles off.

Water is the lifeblood of ecosystems, terrestrial as well as aquatic. Its circulation is vital to the health of its environment. But the patterns of its movements are easily disturbed. Water that is not evaporated from surfaces in the uplands reaches streams and wetlands, first by flowing overland (as runoff, carrying with it sediment and organic debris) and secondly by infiltrating the soil to replenish groundwater, which is passed along through slow seepage. Even as mild an activity as grazing can alter the density of the plant canopy (which intercepts and slows rainfall) and soil porosity (which controls the division of water between surface runoff and slower percolation or seepage). Cultivation has even more dramatic effects.

Studies my colleagues and I began in 1969 on the watershed of Wisconsin's Lake Wingra illustrate some of the effects of human activity on hydrological systems. Just over half of the five-square-mile watershed lies within the City of Madison and supports 25,000 people. The remainder is largely managed as a natural area—the University of Wisconsin Arboretum. Protected communities include forests, prairies, springs, marshes, and lakeshores. The drainage maintains 300-acre Lake Wingra itself, now totally enclosed by the urban area and the arboretum.

Among the questions we sought to answer in our research were these: what were the hydrology and natural biota of the wetland and aquatic components of this watershed at the time of settlement by Europeans, and what actions brought about the observable changes?

Surprisingly detailed scientific records from the 19th and early 20th centuries helped us begin to chart an answer. The surface hydrology of the original prairie and oak savanna found here by surveyors in the 1830's is reflected in that of the modern arboretum. Established, in part, on lands that were cultivated in the 1930's, it is characterized by a high infiltration rate for water in its forests and prairie—and low runoff, except in periods of frozen soil. Early records also show there was a far more extensive wetland system around the lake, fed by more than 30 springs. Some of these were large, with sustained flows (and associated biota), while others were small and seasonal. The lake very probably qualified, in those days, as "spring fed."

Today, despite 50 years of protection in the two-square-mile arboretum, only four of the original springs remain. Although efforts to re-configure the lake and its marshy edges through drainage, dredging, filling, and damming were initiated 70 to 100 years ago (their effects are still visible), the

springs were not lost in this way. Interestingly enough, the reduced influx of groundwater through the springs, and its replacement by surface runoff, is attributable to a variety of "out-of-sight, out-of-mind" changes in land use and pumping within the watershed. Ordinarily, a high infiltration rate in the natural communities of a watershed ensures replenishment of the shallow groundwater table. This maintains spring flow. However, human activity has altered water flow patterns in the upland systems of the urban and suburban portions of this watershed, reducing the detention of water—as well as its infiltration—and thereby increasing runoff.

Within the aquatic environments around the Lake Wingra basin, and others like it, the most imporant ecosystem qualities, including biotic diversity, are controlled in large measure by the mix of water types (runoff vs. groundwater) reaching the wetlands and springs. Our research reveals that this lake and its associated aquatic systems—previously spring-fed—are now dominated by surface runoff, despite the fact that a large portion of the land and four-fifths of the lakeshore have been under protection for many years. It was deep pumping (to supply water in the urban portions of the watershed) and the associated draw-down of groundwater that dried up many of the springs at Lake Wingra.

Another key finding of the Lake Wingra studies concerns the seasonality of the hydrological environment. Researchers followed the seasonal and total annual "loading" of water and nutrients into a wetland at the west end of the lake. Their goal was to determine whether this wetland provided any buffer between the land and the lake. The upland area draining into the wetland is entirely urbanized. Results showed that during the snow-melt period, the high water level and partially frozen surface of the marsh prevented it from detaining any significant amount of water or nutrients. During the summer, however, when water uptake and evaporation through the living plants had drawn the marsh's water level down, almost all of the runoff (with its sediment and nutrients) was intercepted and retained.

A third discovery we made at Lake Wingra was that the surrounding wetlands could ensure only minimal, though well-timed, inflows of nutrients while maintaining, for the most part, a sustained flow of seepage to the lake. We found that during the early spring, the living biomass contained in a water column must expand tenfold from its near-dormant overwintering condition to a fully developed aquatic ecosystem—and it must do so in little less than one month! Even a relatively rich lake like Wingra is extremely limited in nutrients during this expansion period. A large influx of nutrients through snow-melt and runoff from adjacent frozen surfaces provides the essential biological resource base by the time many species enter their reproductive stages. In the early summer, however, *recycling* of nutrients—in an enriched and dynamic broth—sustains the aquatic system's productivity.

Despite general knowledge of the aquatic food chain, and a basic understanding of the complex dependencies of aquatic species on hydrological events, we have few descriptions of what is being lost in this country, biologically, to extensive stream channelization, dam construction, and strategies to maintain a constant flow year-round for electrical generation. These uses of water contribute to human comfort, but how many other species are adapted to the changes they bring?

If we are ever to comprehend the coupling of the original biota with the unique seasonality of hydrological systems in the various regions of the nation, we must protect representative systems in their natural state. A program to maintain the availability and quality of water for the biota of an adequate sampling of our many aquatic environments—arid arroyas, prairie streams and marshes, Mississippi flood-plain bayous, and the Southeast's coastal-plain swamps among them—will challenge conservationists and scientists alike. The fundamental intricacy of these systems has been too long overlooked. Fortunately, we are continuing to learn even more about the remarkable workings of water on the land—and enabling ourselves to better protect the life they foster.

FALL TOUR OFFERED: ADIRONDACK MOUNTAINS

Covering 9,000 square miles in northern New York, the Adirondack Park is the largest protected sanctuary in the continental U.S. Over 2½ million acres of the park are protected as "forever wild."

The Adirondack tour offers Conservancy members and their guests the chance to visit the Park on the weekend of September 23 to 25, 1983. You will learn about the role the Adirondack Conservancy has played in preserving this vast wilderness, and stay at the famous and historic Ausable Club, which owns and protects over 7,000 acres in the heart of the high peaks region of the Adirondacks. The cost of the trip is $149.00. Don't miss this visit to "the land that nobody knows."

For details, write to Adirondack Fall Tour, c/o Travelworld, 1500 Wilson Boulevard, Arlington, Virginia 22209 or call (703) 525-3605.

NEW PROJECTS

ALABAMA

Bon Secour National Wildlife Refuge—Addition—(Baldwin County). In cooperation with the federal government, the Conservancy has purchased an additional 323 acres on Ft. Morgan peninsula: sandy beach fronting the Gulf of Mexico for 5,300 feet—backed by hillocks, swales, and sloughs. Among the significant species frequenting the area are gray kingbirds and brown-headed nuthatches. The land, acquired with Richard King Mellon Foundation funds under the Rivers of the Deep South Program, will be conveyed to the U.S. Fish and Wildlife Service for inclusion in its refuge: critical nesting and feeding grounds for birds of two flyways.

CALIFORNIA

Kaweah Oaks, Tulare County. This woodland oasis boasts what may well be the San Joaquin Valley's last grove of naturally occurring valley oaks (*Quercus lobata*). Targeted for protection by the California Critical Areas Program, the flat 324-acre property is bisected by a deep creek that provides the high water table critical to its parklike stands of oaks. Because it is a natural area lodged among agricultural lands, the new preserve serves as a haven for nesting raptors and a number of native mammals. The California Field Office must raise $1,300,000 to cover acquisition costs and establish a stewardship endowment.

NEW YORK

Accabonac Harbor—Addition—(Suffolk County). Working with the Town of East Hampton, the Conservancy has acquired a 2-acre addition to its 116-acre tidal marsh preserve. Encompassed by a 1,000-acre estuary, the area hosts 158 bird species, including peregrine falcons (federally listed as an endangered species) and nesting ospreys. Its waters provide overwintering grounds for harbor seals and a nursery for an impressive variety of aquatic species, including nearly 100 invertebrates. The Town of East Hampton will manage the addition in concert with the South Fork/Shelter Island Chapter.

NORTH CAROLINA

Bonas Defeat Gorge (Jackson County). The Conservancy has assisted the U.S. Forest Service in purchasing 39,000 rugged acres of wooded mountain land for inclusion in the Nantahala National Forest. The area's 1,000-acre spruce-fir forest is among the nation's southernmost, as are its several high-elevation grass balds (treeless areas of uncertain origin found on certain summits in the Appalachians). Several plant species of special concern in the state flourish here—blackstem spleenwort, mountain corydalis, and alumroot among them. Precipitous gneissic cliffs and eight waterfalls (including 250-foot-high Flat Creek Falls) lend scenic drama to the expanse.

OHIO

Pickerington Pond—Addition—(Franklin County). The character of this rolling terrain, whose ponds and marshes swell and recede with fluctuating water levels, closely resembles that of prairie pothole country further west. Only 20 minutes from downtown Columbus, it's a waterfowl haven, with 212 species counted (including such rarities for Ohio as the glossy ibis, European teal, whimbrel, and little blue heron). Purchase of 36 acres extends protection to critical wetland habitat and a permanent stream. It will be conveyed to the Columbus and Franklin County Metro Park District, which manages the existing preserve. Conservancy-protected land here now spans 297 acres.

TENNESSEE

Marion County Sinkhole, Marion County. Sixty feet down, in the cool, shady dampness of a Tennessee sinkhole, American hart's tongue ferns (*Phyllitis scolopendrium* var. *americana*) make their only appearance in the state—and one of only three in the South. As the plant is more at home in Michigan, Ontario, and New York, this population is thought to be an Ice-Age relict, sustained by the presence of a spring-fed creek that wells out of a nearby cave, tumbles over the sinkhole's rim and into another cave on its floor. A management lease negotiated by the Tennessee Chapter and the landowner, Moore-McCormick Resources, Inc., protects the five-acre site and its flora.

Don Harker

Bad Branch Preserve

When prodigiously wild Bad Branch Gorge —an enclave of endangered plants and animals in the coal fields of southeastern Kentucky— won the state natural heritage program's acclaim, the burning question was, "Who owns the land?" Without the aid of plat maps, the Conservancy's new field office in Lexington set to work.

A year and a half and many plot twists later, the chapter had assembled a 548-acre preserve, purchasing 343 acres and leasing three adjacent tracts. Most challenging, though, is a recently negotiated option to purchase 214 acres in the biological heartland of the gorge: an option that must be exercised by November of this year.

Fleet, unsullied Bad Branch Creek dives through bouldery woodlands on the Cumberland Plateau in a series of waterfalls, sculpting "rockhouses" and overhangs in the sandstone cliffs. The area's topographical diversity has fostered an extraordinarily rich flora and fauna. Four plant species, including Fraser's sedge and American burnet, thrive here at their only Kentucky site. There is streamside habitat for numerous small mammals (longtailed shrews, listed as endangered in the state, among them), and the creek itself supports the uncommon arrow darter, an endemic fish species.

To make the purchase, the Kentucky Chapter drew for the first time on its revolving land preservation fund, created in 1981 with a generous grant from Atlantic Richfield Foundation on behalf of the Anaconda Aluminum Company. To replenish the fund, cover the cost of the parcel currently under option, and provide for stewardship of the new preserve, the Conservancy needs $175,000. What's at stake is priceless—a wilderness to conjure up visions of Daniel Boone's Kentucky.

CHAPTER AWARDS ANNOUNCED

The Conservancy's Board of Governors recently voted to present the 1982 Outstanding Chapter Award to Maryland and the year's Outstanding Chapter Progress Award to Iowa. In making the announcement, Conservancy President Bill Blair commended the Maryland Chapter for its model state program, for establishment of the East's first full registry program, and for the high quality of the chapter's 1982 projects, all of which provide habitats for species or natural communities that are endangered in the nation or in the state.

The Iowa Chapter was cited for strongly supporting the establishment of a state field office, developing a major Conservancy state program, launching a highly successful landowner contact/registry program, and for coordinating efforts to transfer the Iowa Natural Heritage Program to the state government.

Both awards will be presented on October 22 at the Conservancy's 1983 Annual Meeting in Tucson, Arizona.

VISIT A MONTANA RANCH

Join us this summer and explore the Conservancy's extraordinary Pine Butte Swamp Preserve—spectacular surroundings for riding, hiking, fishing, photography, birdwatching . . . or just relaxing.

Al and Sally Haas invite you to stay at a unique dude ranch in the heart of Montana's Rocky Mountain Front. For more information, contact the Circle 8 Ranch, P.O. Box 457, Choteau, Montana 59422/(406) 466-5564.

CORRECTION

The photo on the cover of the January/February '83 *News* was incorrectly credited. The photographer was Steve McCormick.

Free Money?

Well, almost. A gift of appreciated real estate can create an attractive tax shelter while helping preserve America's natural heritage. Advantages of such a gift include:

- Federal and state tax savings
- Fast disposition
- Honorary Life Membership in the Conservancy
- Elimination of ownership costs

For further information, please contact Ray M. Culter, Director of Trade Lands, The Nature Conservancy, 1800 N. Kent Street, Arlington, Virginia 22209; (703) 841-5351.

"WEEKENDS FOR THE BIRDS" AT THE VIRGINIA COAST RESERVE

Join us for a weekend of bird watching at the Conservancy's spectacular Virginia Coast Reserve—35,000 acres of undisturbed barrier island beaches and wetlands:

On the weekend of July 8, you'll have a chance to see some of the largest colonial nesting-bird populations on the East Coast—terns, herons, plovers, and a host of beach- and dune-nesters. Dr. John S. Weske of the Smithsonian Institution will guide a group of six. Reservation deadline: June 24.

On the weekend of August 12, witness a pageant of fall migrants—shorebirds, raptors, and upland species. Dr. Mitchell A. Byrd of the College of William and Mary will accompany a group of six. Reservation deadline: July 22.

On the weekend of October 28, bid farewell to late fall migrants and welcome wintering waterfowl. Chandler Robbins, coauthor of the popular *Birds of North America,* will lead this final weekend tour for 20 participants. Reservation deadline: October 7.

The cost per person for each tour is $275, of which $200 will be credited as a tax-deductible gift. Fee covers two nights' lodging, Friday night reception, lunch and dinner on Saturday, and breakfast on Sunday. For further information write to: Kathie Dixon, Virginia Coast Reserve, Nassawadox, VA 23413.

VISIT DOG ISLAND

It's a pristine barrier island 20 miles off Florida's Gulf Coast—and you're invited! The Conservancy owns 75 percent of 1,800-acre Dog Island at the eastern end of Apalachicola Bay. Its beaches offer the finest shelling in the state, and there are countless other recreational opportunities. Eight modern apartment units are available for rental. For more information write to Mr. Dan Tonsmeire, c/o The Pelican Club, P.O. Box 301, Carrabelle, Florida 32322, or call (904) 697-2839. Conservancy members will receive special consideration.

NEXT IN THE NEWS:

ON THE LAND

The July/August issue brings you news from the Conservancy's stewardship program. Read about how management decisions are made for the largest system of privately owned nature sanctuaries in the world. See the Conservancy at work on the land—next in the *News.*

ATTENTION!

Long-Term Owners of the Following Stocks:

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AMAX Inc.
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The stock of these and many other fine companies is currently yielding 5% or less.

By gifting these securities to our NEW Pooled Income Fund, you could:

—Double your annual income from these investments
—Receive a large income tax deduction
—Avoid all capital gains tax
—Make a significant gift to The Nature Conservancy

The new Fund works as follows:

1. Securities are irrevocably transferred to the Fund.
2. The Fund reinvests your gift for a high yield. Neither you nor the Fund pays capital gains tax.
3. You or your named recipient(s) receive annual income for the rest of your life from the full fair market value of the gift. (A 10-12% return is expected the first year.)
4. You receive a large income tax deduction the year you make the gift. SINCE THIS IS A NEW FUND, YOUR DEDUCTION COULD BE TWO TO THREE TIMES AS LARGE AS THAT OFFERED BY MOST OLDER FUNDS.
5. After your lifetime, your share of the principal is used by The Nature Conservancy to protect our most significant natural areas.

For more information, handled in full confidence, please contact:

Alice Pinsley
Director of Planned and Capital Giving
The Nature Conservancy
294 Washington Street
Boston, Massachusetts 02108
(617) 338-2103

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The Katharine Ordway Associates program was established in Fall 1982 to recognize those individuals who —with a minimum annual gift of $1,000 to the General Fund—play a leadership role in supporting the national operations of The Nature Conservancy.

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